Table I

Example	Compressive Strength, psi After 48 Hrs.	Diametral Tensile Strength, psi After 15 Min.	Diametral Tensile Strength, psi After 24 Hrs.	Flow Test, %	Dimension Change Test, %/cm
1	51,925	710	5,256	0.5	+0.01
2	65,600	591	6,257	—	0
3	—	547	3,880	1.7	+0.03
4	33,500	318	3,540	0.9	0

The amalgams of Examples 1 and 2 and also the amalgams made from Alloy No. 1 by itself and Alloy No. 2 by itself were checked for the presence of gamma-2. This was done by anodic polarization measurements in saline solution for about 24 hours after trituration and condensation, the results being presented in the anodic polarization diagrams shown in FIG. **1.** As already mentioned, these diagrams represent one means of detecting the present of gamma-2, the indication being a current density peak at about −250 mv(SCE), indicative of the formation of tin oxide or tin oxychloride. The technique is at least as sensitive as X-ray diffraction for detection of the gamma-2 phase and is further described in the literature, e.g., Journal of Dental Research, Vol. 51, No. 6, November—December 1972, at page 1675 (Copyright 1972 by International Association for Dental Research).

As shown in FIG. **1,** the amalgams of Examples 1 and 2 do not display the peak associated with the presence of gamma-2 and their electrical current densities are lower than the densities obtained with Alloy No. 1 by itself or Alloy No. 2 by itself in the unmixed state. The absence of the gamma-2 peak is indicative of resistance to gamma-2 corrosion. It is evident from Table I that the amalgams of Examples 1 and 2 have satisfactory physical properties.

It will be noted that when the physical properties shown in Table I and the corrosion resistant properties are considered collectively, optimum results were achieved by an admixture of the two alloys described herein in a ratio of 3:1, as employed in Example 1. With such preferred compositions dental amalgam compositions are obtained which not only have desired corrosion resistance but also meet the specifications established by the American Dental Association.

It will also be noted that while the mixture of Example 4 has the same chemical composition and particle size distribution as the preferred mixture of Example 1, it required a higher mercury-alloy ratio to produce a workable dental amalgam. In addition, it was distinctly inferior with respect to physical properties.

Further illustrative examples are as follows:

EXAMPLE 5

An amalgamable dental composition in accordance with the invention is prepared by mechanically mixing 4 parts of an alloy composed of 60% by weight silver, 15% by weight tin and 25% by weight copper with 2 parts of an alloy composed of 60% by weight silver, 32% by weight tin, 7% by weight copper and 1% by weight zinc. Both of the alloys are composed of irregularly shaped particles having a particle size distribution within the range of about 5 to 40 microns.

EXAMPLE 6

An amalgamable dental composition in accordance with the invention is prepared by mechanically mixing 4 parts of an alloy composed of 55% by weight silver, 18% by weight tin and 27% by weight copper with 1 part of an alloy composed of 64% by weight silver, 29% by weight tin, 4.5% by weight copper and 0.5% by weight zinc. Both of the alloys are composed of irregularly shaped particles having a particle size distribution within the range of about 5 to 40 microns.

EXAMPLE 7

An amalgamable dental composition in accordance with the invention is prepared by mechanically mixing 3 parts of an alloy composed of 45% by weight silver, 22% by weight tin and 33% by weight copper with 2 parts of an alloy composed of 62% by weight silver, 33% by weight tin, 4.2% by weight copper and 0.8% by weight zinc. Both of the alloys are composed of irregularly shaped particles having a particle size distribution within the range of about 5 to 40 microns.

While it is essential that the dental composition of this invention be in the form of a mixture of particulates of the two alloys when used, and may be supplied in such form when supplied, it should be understood that for distribution purposes the two alloys can be in the form of separate powders which can be admixed by the ultimate user in the required proportions. Alternatively, the two admixed alloys in the required proportions can be pressed into tablet or capsule form for convenience.

While only certain embodiments have been set forth, alternative embodiments and various modifications of the embodiments depicted will be apparent from the above description to those skilled in the art. These and other alternatives are considered equivalents and within the spirit and scope of the present invention.

Having described the invention, what is claimed is:

1. A composition adapted for amalgamation with mercury to form a dental amalgam consisting essentially of a uniform admixture of a major proportion of a first alloy composed of about 40 to 70% by weight silver, about 10 to 30% by weight tin and about 20 to 40% by weight copper in particulate form, and a minor proportion of a second alloy composed of about 55 to 75% by weight silver, about 20 to 40% by weight tin, about 0.05 to 10% by weight copper and about 0.1 to 2.0% by weight zinc in particulate form.

2. A composition of claim **1** wherein both of the alloys are in the form of irregularly shaped particles.

3. The composition of claim **1** wherein both of the alloys have a particle size distribution in the range of about 1 to about 100 microns.

4. The composition of claim **1** containing about 55 to about 90% by weight of said first alloy and about 10 to about 45% by weight of said second alloy.

5. The composition of claim **1** wherein approximately 3 parts by weight of said first alloy are employed per 1 part by weight of said second alloy.